

REMARKS

This responds to the Office Action dated on March 29, 2006. Claims 22, 47 and 52 are amended, claims 54-65 are canceled without prejudice or disclaimer, and no claims are added. Thus, claims 1-53 remain pending in this application.

§102 Rejection of the Claims

Claims 1-3, 11 and 16 were rejected under 35 U.S.C. § 102(b) as being anticipated by Biever "Secrets of 'strained silicon' revealed" *New Scientist* (17 December 2003).

Applicant respectfully traverses. The filing date of the present application is July 21, 2003, which is before the date of Biever. Thus, Biever does not constitute prior art. Applicant respectfully requests withdrawal of the rejection, and reconsideration and allowance of the claims.

Claims 22, 26-28 and 43 were rejected under 35 U.S.C. § 102(e) as being anticipated by Belford (U.S. Patent No. 6,514,826). Applicant traverses.

Claim 22 has been amended to clarify that, when the substrate wafer is in the flexed position, the silicon membrane is not bonded to the central region of the substrate wafer. Applicant is unable to find, among other things, in the cited portions of Belford a method that includes among other things bonding a peripheral region of the substrate wafer to a peripheral region of a silicon membrane and not bonding the silicon membrane to the central region of the substrate wafer when the substrate wafer is in the flexed position, as recited in the claim.

With respect to independent claim 28, Applicant is unable to find, among other things, in the cited portions of Belford a method that includes, among other things, performing a bond cut process to form a silicon membrane from a crystalline sacrificial wafer and bond a peripheral region of the substrate wafer to a peripheral region of a silicon membrane when the substrate wafer is in the flexed position, as recited in the claim. Belford refers to an embodiment in FIG. 2 where a sheet is bonded to a membrane (Col. 3 lines 16-32), and refers to biaxial strains using differential thermal bonding (FIGS. 3-5). FIGS. 6-8 are referenced when stating that standard SOI techniques can be used along with Differential Thermal Bonding Techniques to induce biaxial strain (Col. 3 lines 52-54). The SMART CUT process is identified with respect to the

thermal bonding process (Col. 3 lines 63-67). The thermal bonding process does not involve flexing the substrate. Thus, Belford does not anticipate the claim.

With respect to independent claim 43, Applicant is unable to find, among other things, in the cited portions of Belford a method that includes, among other things, polishing the bonded crystalline wafer to thin the crystalline wafer and control the induced strain, as recited in the claim. In Belford, the thickness of the membrane is reduced before bonding (Col. 3 lines 6-25).

Claims 31, 33, 35-38 and 44 were rejected under 35 U.S.C. § 102(b) as being anticipated by Doyle et al. (U.S. Patent No. 6,228,694). Applicant respectfully traverses.

With respect to claim 31, Applicant is unable to find, among other things, in the cited portion of Doyle et al. a method that includes among other things forming voids in a substrate wafer to provide the substrate wafer with a desired flexibility, and flexing the substrate wafer into a flexed position, as recited in the claim. FIG. 2A and 2B illustrate stress, but do not show voids in the substrate wafer to provide the substrate wafer with a desired flexibility.

With respect to claim 44, Applicant is unable to find, among other things, in the cited portion of Doyle et al. a method that includes among other things forming a predetermined contour in one of a semiconductor layer and a substrate wafer, and bonding the semiconductor layer to the substrate wafer and straightening the predetermined contour to induce a predetermined strain in the semiconductor layer, as recited in the claim.

§103 Rejection of the Claims

Claims 4-7, 9, 10, 13, 14 and 17 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Biever "Secrets of 'strained silicon' revealed" *New Scientist* (17 December 2003) in view of Belford (U.S. Patent No. 6,514,826). Applicant respectfully traverses. The filing date of the present application is July 21, 2003, which is before the date of Biever. Thus, Biever does not constitute prior art. Applicant respectfully requests withdrawal of the rejection, and reconsideration and allowance of the claims.

Claims 8, 12 and 18 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Biever "Secrets of 'strained silicon' revealed" *New Scientist* (17 December 2003) in view of Doyle et al. (U.S. Patent No. 6,228,694). Applicant respectfully traverses. The filing date of the present application is July 21, 2003, which is before the date of Biever. Thus, Biever does not constitute prior art. Applicant respectfully requests withdrawal of the rejection, and reconsideration and allowance of the claims.

Claims 23-25, 30, 34, 42, 45, 47, 48, 50, 52 and 53 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Doyle et al. (U.S. Patent No. 6,228,694) in view of Belford (U.S. Patent No. 6,514,826). Applicant respectfully traverses.

Claims 47 and 52 have been amended to clarify that, when the substrate wafer is in the flexed position, the silicon membrane is not bonded to the central region of the substrate wafer. With respect to amended independent claims 47 and 52, Applicant is unable to find, among other things, in the cited portions of the references a method that includes, among other things, bonding a peripheral region of the substrate wafer to a peripheral region of the silicon layer and not bonding the silicon membrane to the central region of the substrate wafer when the substrate wafer is in the flexed position.

With respect to amended independent claims 47 and 52, Applicant is unable to find, among other things, in the cited portions of the references a method that includes forming a predetermined contour in one of a semiconductor layer and a substrate wafer. FIG. 2 of Belford, for example, flexes the membrane, which is different than forming a contour as recited in the claim.

Claims 29, 39, 40 and 41 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Belford (U.S. Patent No. 6,514,826) in view of Yamazaki et al. (U.S. Patent No. 6,902,616). Applicant respectfully traverses. The rejection states that Belford discloses the subject matter except forming a convex contour in a surface of a sacrificial crystalline wafer. The sacrificial crystalline silicon wafer is used in a bond cut process. Applicant respectfully submits that Yamazaki does not show a sacrificial crystalline wafer as recited in the claim.

With respect to amended independent claims 47 and 52, Applicant is unable to find, among other things, in the cited portions of the references a method that includes forming a convex contour in a surface of a sacrificial crystalline wafer. Applicant submits that forming a convex contour in a surface is different than flexing. Further, Applicant is unable to find a method that includes performing a bond cut process to form an ultra-thin semiconductor membrane and bond the ultra-thin semiconductor membrane to a substrate wafer where the ultra-thin semiconductor membrane is flattened and strained when bonded to the substrate wafer.

Dependent Claims

The dependent claims are respectfully asserted to be in condition for allowance at least for the reasons asserted with respect to their base independent claims.

Reservation of the Right to Swear Behind References

Applicant maintains its right to swear behind any references which are cited in a rejection under 35 U.S.C. §§102(a), 102(e), 103/102(a) and 103/102(e). Statements distinguishing the claimed subject matter over the cited reference are not to be interpreted as admission that the references are prior art.

In the interest of clarity and brevity, Applicant has not addressed every assertion made in the office action. Applicant's silence regarding any specific assertion contained in the office action is not intended to be taken as an admission of the assertion.

CONCLUSION

Applicant respectfully submits that the claims are in condition for allowance, and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicant's attorney at (612) 373-6960 to facilitate prosecution of this application.

If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743.

Respectfully submitted,

LEONARD FORBES ET AL.

By their Representatives,

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CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail, in an envelope addressed to: Commissioner of Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on this 29 day of June, 2006.

Lisa Posorske

Name

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Signature